A Policy Framework for Reconciling Economic Development and Environmental Preservation with Emphasis on the Charleston Harbor Project Area

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INTRODUCTION

The goals of economic development and environmentalism (construed here to mean preservation and conservation of natural, historical, and cultural resources) are more often than not in a constant struggle. It almost seems as if by definition economic development, which builds and generates jobs and income but in the process destroys the environment, must be in conflict with efforts to preserve the environment, which often means stopping development - tree huggers vs. tree cutters. However it is not necessarily the case that environmentalism and development must work at cross purposes. There can be a harmony between the two. The purpose of this research is to investigate policies that would harmonize the two goals - environmental quality and economic development. The goal of this research is to present a framework within which to place much of the research that has taken place and is on going.

The following four issues are addressed in this paper:

1. There is a vast theoretical framework for the economic analysis of the environment. Environmental economics deals with the problems of externalities, both positive and negative. Externalities are either benefits received from the actions of others without paying for them or costs incurred by the actions of others. These problems are viewed as market failures since the market place, as it currently exists, cannot take into account the problems of externalities. The main focus on much of the economic analysis of environmental issues is to devise methods to make the market work, that is, set up a framework so that economic agents acting within that framework will make decisions that are socially desirable from a policy standpoint. Since environmental issues are outside of the market, as our market institutions currently stand, there is no establish price or value determined by the market for environmental resources. The first step in any kind of analysis is to measure the costs and benefits of environmental protection or degradation. A number of models exist that accomplish this task. Further, there are models that address the costs and benefits of economic development. In order to understand the result of much of the research that is done in

this area, a firm understanding of the various models, their limitations and proper applications need to be developed.

2. Economic development, particularly industrial recruitment, is a major policy goal of the state of South Carolina. Environmental protection needs to be placed within the context of the goals and policies of economic development.

3. Do preservation and conservation fit into an economic development strategy? This of course is the major issue that must be reconciled.

4. How do these issues apply to the Charleston Harbor Project Area? A vast amount of research could be done for each of the above issues. The main problem however, is how to interpret the research and how to place the research within a policy framework that is usable. The goal of this project is to provide the framework for the research on the four issues. This framework should be understandable and usable for policy makers.

The paper is divided into two parts. The next section focuses on the various types of models that are used in environmental economics to measure the value of environmental resources. In the second section we discuss a policy framework for environmental policy within the CHP area. Finally, in the conclusion we summarize our research and provide some possible extensions.

How to Value the Charleston Area Environment?

Introduction

"The market place knows the price of everything and the value of nothing."

Environmental resources, however, are a case where the market knows neither the price nor the value, and therein lies the difficulty of analyzing environmental policy. The market place and the laws of supply and demand serve the purpose of producing and allocating market produced goods and services admirably well. Environmental resources fall in the category of market failures - primarily because no market exists for the pricing of these resources. Environmental economics is a branch of economics that deals with the economic analysis of these non-market resources. The primary thrust of the analysis is to determine a market value of the resources.

There are a host of other issues related to environmental policy that we will touch on briefly but are beyond the scope of this report. One of the issues is the role of property rights. One of the problems with environmental resources is the lack of clearly defined property rights. In the absence of these rights, externalities are created. Coase, for example, developed a model, which eventually won him the Nobel Prize in economics, which showed that environmental problems could be solved with the proper specification of property rights. In a simple way, one could say that pollution of the Cooper River occurs because no one owns the river. By way of hypothetical example, if the Sierra Club owned the river then Westvaco would be obliged to pay for any polluting discharges. Further, the Sierra Club could rent use of the river to fishing. A market price could then be negotiated that would balance the competing uses of fishing and industry. Similarly, if Westvaco owned the river, then fishing and environmental interests could negotiate for the use of a clean river. Westvaco as a company would then have to decide which use of the river was more profitable to it: production and pollution or sale of clean water rights. The problem of determining the economic value of the river would then be solved by bargaining. This example is an oversimplification of what has become called the Coase Theorem.

When someone buys property, exactly what do they own? Ownership rights are proscribed by law through a complex interaction of history and tradition (common law) and legislation. Purchasing several hundred acres of forested land currently gives the owner of that land the right to the resources; the trees, minerals, soil, but not necessarily unrestricted ownership and use of water flowing through the property. Further, what if a spotted owl resides in the trees. Does ownership of the trees imply ownership of the spotted owl also? In fact, the problem of the spotted owl is that no one owns the species, or from one point of view, everyone does. A lumber company may contend that it has the right to cut the trees regardless of the owl, while "tree huggers" may claim that the owl should be protected. In Charleston this problem is even more complicated when one considers historic buildings. The question is when you buy a historic building do you also get the history? Who owns the history of the building? Whether history is valuable or not can be addressed in some of the models we will present in this review. Whether the property owner has the unrestricted ability to change the historical nature of the building is a property rights issue. These kinds of questions are fascinating and way beyond the scope of this report. But they do point to some of the problems that are unique to environmental resources.

Environmental economics deals with the problems of externalities, which can be both positive and negative. Externalities are either benefits received from the actions of others without paying for them or costs incurred by the actions of others. The market place, as it currently exists, does not take into account the problems of externalities. The main focus of much of the economic analysis of environmental issues is to devise methods to make the market work, that is, to set up a framework so that economic agents acting within that framework will make decisions that are socially desirable from a policy standpoint. The first step in constructing these policies to is measure the costs and benefits of environment protection or degradation. A number of models exist that accomplish this task. The purpose of this section of the report is to present an overview of these models.

Cost-Benefit Approach to the Environment

A number of models have been developed to determine the value of environmental resources. The purpose of these models is to place a monetary value on environmental resources. This monetary value can then be used to assess the damage caused by environmental degradation (or preservation). The prime concept is willingness to pay. (WTP) In a market framework we can determine the value of goods by the price which indicates the consumer's WTP. Another measure is willingness to accept (WTA). WTA is often used in surveys where questions are designed to evaluate a WTA certain pollution in a dollar amount. For example, a question might be how much would you have to be paid to live in a polluted environment. In the survey literature we have seen that WTP is often very different from WTA. For example, two surveys could ask two different but related questions: 1) How much would you be willing to pay to eliminate a one-in-a thousand chance of immediate death? and 2) How much would you have to be paid to accept a one-in-a thousand chance of immediate death? A typical answer might be "I wouldn't pay more than $200 to eliminate the risk, but I wouldn't accept an extra risk for less than $50,000." Willingness to pay and willingness to accept for the same risk can often be very different.

In this section we review the most common approaches used in the field with particular attention given to how these models may be applied to the CHP region.

1. **Physical linkage approach**. Using this approach the benefits are measured based on a technical relationship between the resource and the use of that resource. The most common method used in this approach is called the ***damage function method*** . An example of this method would be to identify the relationship between a particular contaminant and the damage done to the birth rate of a particular fish. A monetary value would then have to be placed on the fish, usually by assuming the market value of selling the fish (if the fish is an eatable one). The *damage function method* is most commonly used in such a narrow application, as opposed to a more comprehensive approach used in some of the other methods. The damage function is very

suited to research that can scientifically identify the effects on fish, for example, of industrial waste disposal in the Cooper River. Most often the waste would be one type from one source (point source pollution.)

2. **Behavioral linkage approach**. Models using this approach come closer to treating the environmental resources in a market framework. Estimates of environmental benefits are made by using observations of consumer behavior in actual markets or in survey responses about hypothetical markets. The models are divided into direct and indirect methods. The *political referendum* and *CVM* models are examples of direct methods.

Political referendum methods use voting results from political referenda on proposed changes in environmental quality. This method is most appropriate when a vote has been taken on a specific type of environmental project, such as a referendum to pay for a cleanup. The method has obvious limitations in that most often referenda have not been used to determine willingness to pay. When such a vote is taken, we have a clear observation of what people are willing to pay and thus we have a clear measure of the value of the environmental resource. The method could be broadened somewhat to cover examples such as the Charleston County bond issuance to improve boat landings. From this observation we have some idea of how much access to water for recreational purposes is worth to the taxpayers of Charleston county. It must be noted that this dollar figure is much too low. But as a starting point, we know from these types of public projects (especially ones where bonds have been issued specifically for the project) a minimum to estimate the value of the resource.

Contingent Valuation Method (*CVM*) utilizes survey to elicit the respondents WTP for environmental improvement based on hypothetical market conditions. The *CVM* approach has been widely used to assess damages from events as dramatic as the Exxon Valdez oil spill to such mundane issues as the value of clean streets. There are many problems associated with *CVM* surveys, most of which are associate to the general problem of all surveys and to the

problem of setting up a hypothetical market. (Hypothetical money is not psychologically the same thing as real money.) A well designed *CVM* survey could be used in the CHP area to identify WTP for environmental resources. The narrower the survey the more accurate. These surveys tend to be quite costly also. As a side note, an interesting issue to address using a *CVM* survey of public leaders would be the trade off between jobs and environmental quality; i.e., how many jobs would the official be willing to forego in development in order to continue fishing off the Battery.

Indirect estimation methods make inferences about markets or conditions that are somehow linked to the resource under consideration. Three models dominate the literature: ***averting expenditure method*** (*AEM*), ***travel cost model*** (*TCM*), and the ***hedonic price model*** (*HPM*).

The *averting expenditure method* looks at spending on goods that are substitutes for environmental quality such as air and water purifiers and other cleaning mechanisms. Briefly what the *AEM* does is to look at the amount that is being spent for cleanup and avoidance of pollutants and using this value as an estimate of how much a cleaner environment is worth. The *AEM* method is probably not very appropriate for the CHP region. Europe provides a more appropriate example where the acidic content of the air in some historic cities in Europe requires periodic cleaning of buildings to preserve them.

The *travel cost method* estimates the value of environmental resources based on the amount of money spent to reach and enjoy those resources. This approach is very appropriate to the CHP region. Tourists spend money to enjoy the climate, beaches, and history of Charleston. Using the *TCM* a researcher would include total travel expenses (air fare, hotel, food, etc) incurred by tourists. A model related to the *TCM* called a ***random utility model*** is sometimes used. This model uses an econometric technique called a conditional multinomial logit model. With this technique multiple sites may be compared to isolate the effect of an environmental good given all the other characteristics of the location in question. For example, travelers choose between

Charleston, Myrtle Beach, Orlando, etc. Each one of these destinations has characteristics that may be modeled, including environmental resources. Pooling all of them together into one statistical model is primary advantage of the *random utility model* method.

The *hedonic price method* is based on the theory that a good or service is valued for the attributes or characteristics it possesses. The most common application of this method is in housing prices models. Part of the value of a house is it location; proximity to desirable schools, environmental resources such as parks, clean air, and so on is reflected in the price of a house. One measure of the value people place on the environmental resource would be the price they are willing to pay for houses in desirable areas (after controlling for size, construction materials, etc.) Island property is valuable because of the unique location. However, the unique location would loose much of its value if syringes and other pollutants regularly washed up on the beaches. There is research to support the claim that historical preservation has enhanced housing values in Charleston.

In all of the methods, the relevant value is the marginal willingness to pay (or accept), not the total. Thus economists look at changes in spending given changes in the environment. In order to accomplish this analysis, the researcher needs several estimates of spending over time with identifiable changes in the environment. For example, using a *TCM* to estimate the damage caused by an oil spill would require estimates of tourist spending before and after the spill. The researcher could then attribute any changes in spending to the spill and thus determine the value of the previously clean environment.

There are three major concerns of environmental policymakers: 1) Which of the methodologies presented is most appropriate to the case at hand? 2) which methodology will yield the most accurate measure of the value of the resource? and 3) which methodology is the most cost-effective?

All of the methodologies presented have drawbacks. None is capable of determining a

uniquely correct answer. Based on the existing literature, the *CVM* is a reasonable, though potentially biased, method. It however is the most expensive.

Modest Proposal for Further Research in the Charleston Harbor Project Region

Although only the marginal costs and benefits are relevant to any policy decision, a determination of the total value of environmental resources would be of use. One way to view this analysis would be that the total value is the marginal value without any of the natural resources considered. This type of accounting would be in the vein of a what if study: what if all the resources were destroyed. The values determined would be with resources compared to without resources.

The first step in this analysis would be to identify the stakeholders in environmental resources. Then the appropriate tools could be used. We will provide three examples.

1. Recreational boating and fishing. To approximate the environmental value of recreational boating the following factors would be considered using the various methods:

a. Total fishing licenses issued would provide data on the number of people who fish. A survey (*CVM*) of recreational fishing would provide the environmental value of this activity.

b. Boats are registered. Data on the number of boats and price of boats would contribute to the estimation of the economic value of recreational boating.

c. As was described in the *political referendum method*, public expenditures to provide access to the water would be included.

d. The *travel cost method* would be used to estimate the value placed by non-residents. To this cost we must add boat and equipment rentals.

e. Property values in the CHP region reflect the proximity and value of recreational boating and fishing. The *hedonic price model* could be used to estimate this portion.

2. Commercial fishing. Commercial fishing is probably the easiest benefit to determine. Data on the market value of the catch, payroll of employees, and capital costs of the fleet would be

a lower bound on the economic value of utilizing this resource.

3. Tourism. Many surveys indicate that tourists visit the area for what might be called the Charleston Ambience: a unique combination of history, pleasant environment, beaches, and sport recreational activities. The *TCM* approach would be an appropriate model for this estimation.

The brief description given above provides a direction for this approach. The possibility of double counting is very real and should be avoided. However, note, so many of these models are biased downwards that a little double counting may get us closer to the correct measure. But this must be done with care and open eyes to the problem.

The next section of this report will discuss the compatibility of economic development to environmental preservation. In that section we will also discuss policy issues and provide a framework for convincing policy makers of the desirability of environmental protection.

INTRODUCTION TO POLICY CONSIDERATIONS

It is undisputed that the abundant environmental and cultural resources in the CHP area enhance the quality of life and the overall attractiveness of living in the Charleston area. Without these resources or if these resources suffered substantial degradation, the market value of other resources such as land and other real property would decline. The high quality of these environmental resources certainly contributes to the local and state economies. Exactly how much they contribute is difficult to quantify.

The analysis in Part 1 presents various methods of estimating the market value of these environmental resources. As stated previously, none of these methods is perfect. However, if the CHP needs to estimate the value of the environmental resources in the Charleston area, one of these methods (or a combination of several of them) could be used with some degree of accuracy. Each method has certain strengths and weaknesses in terms of costs, data and time requirements, appropriateness and accuracy.

The CHP=s responsibility for developing an environmental resources policy framework for economic development may require the use of one or more of these methodologies in the future. However, at this time in the overall policy development process, it may be more important to establish some general policy guidelines that will increase the CHP=s ultimate effectiveness, than trying to estimate the exact dollar amount of the area=s environmental resources. If too much time and effort is spent estimating and arguing over scientific and economic technicalities, the effectiveness of the overall policies may be compromised. It may be the case of Anot being able to see the forest for the trees@.

To be effective (and thus successful) the policy framework for the CHP recommendations for economic development must be understood and endorsed (or at least tolerated) by the economic development community. To accomplish this, the CHP must present its policy recommendations in a format that the economic developers will embrace. This will not be easy.

The economic development community is, in general, skeptical of the regulatory agencies. This is especially so for agencies whose missions encompass the preservation and conservation of natural and environmental resources. Although not always, the source of this skepticism is clear. It is often the result of the economic development community and the regulatory process being in conflict -- you must chose between economic growth or preservation and conservation.

In addition, the economic development professionals in the community are intently focused on the short-term goals of job creation and capital investment. They certainly desire a clean environment and a high quality of living. But in general they all too often focus on the incremental value of a new industry announcement rather than the cumulative effects of all economic development actions.

Compounding this is that the economic development professionals have another group who usually support their efforts that also have relatively short-term goals B the elected officials. These political leaders have considerable influence on the economic development professionals not because they share common goals, but also because they generally are the financial supporters of the economic development organizations themselves. The CHP must also effectively promote its policies to this political constituency also.

This is important because the CHP=s economy is going to continue to grow. It is not a question of whether the area will continue to grow, it is a question of Ahow fast@ it will grow and what will be the Aquality@ of that growth? It=s going to continue to grow to a certain extent as a result of the actions and policies of the economic development and the political leaders. Therefore, to be effective, the CHP needs to Amarket@ it=s policy recommendations in the context that the political and economic development communities will understand and embrace. To accomplish this, it is crucial for the CHP to develop a Amarketing strategy@ for it=s economic development recommendations. It will not be enough to just develop policies in-house, publish them, distribute them and Ahope@ that the economic development and political communities adopt them. As with

any consumer product, the better it is marketed, the more customers will buy it. The CHP needs for the stakeholders in the CHP area to Abuy-into@ its environmental and economic development policies.

The following discussion provides a preliminary approach to a marketing strategy designed to assist the CHP in selling its economic development policies to the stakeholders in the area.

Understanding the CHP=s Starting Position

First and foremost, the CHP needs to clearly understand its relative bargaining position in the overall economic development process. The CHP is in a position to recommend environmental policy. It is not an elected official nor is it an extension of local government like most of the economic development organizations are. While it is a component of the larger regulatory agency, it is still not a direct permitting organization. Unfortunately, this puts the CHP in a relatively weak bargaining position.

Nonetheless, the CHP is charged with developing and implementing important environmental resource policy. To do so, it must use sound economic arguments, the most accurate data and the most reputable analysis available to promote its policies. It must use the best marketing strategies available to educate the stakeholders in the area.

Who are the Stakeholders?

The CHP needs to clearly identify the stakeholders in the economic development and environmental preservation and conservation communities. Who are the actors in the economic development community? Is it heavy industrial producers, residential homebuilders, government planners or large landowners such as timber companies? Or is it politicians or all of the above? The CHP needs to identify these actors and understand their goals and how they operate. The CHP must do its best to understand how its environmental policies will affect these stakeholders and be prepared to react and cooperate if possible with these stakeholders.

As with the economic development community, the CHP needs to identify the major

stakeholders on the preservation and conservation side. The economic development community frequently is opposed on sensitive projects by a large group of seemingly unrelated environmental preservationists that suddenly appear from nowhere. They may not be locally based, their legal and political standing in the process may be not be evident to the economic development and political leaders. This uncoordinated opposition may actually backfire on the efforts of those local organizations like the CHP. However, with an established reputation in the economic development community, the CHP could act as a moderator for some of the dialogue between these disparate groups and the economic development community. In the end, it could increase its effectiveness in promoting its own policies and those of other environmental stakeholders.

Short-term vs. Long-term Goals

In general, the goals of most economic development professionals are short-term in nature. These organizations are generally lead by professionals that are financially and professionally rewarded for the number and quality of new industrial announcements. They focus on the number of new jobs they've help to attract to the community and what level of capital investment was recorded in the area over the last year or so. They generally report to boards and commissions that are comprised of business people and local elected officials. It is not surprising that the focus is on the short-term.

Of course, as good citizens, all of these professionals and their governing boards are concerned for the environment. However, they are usually only interested in the incremental impact on the environment from a new industry. While some may understand the relationship between their short-term goals and the preservation and conservation of environmental resources, they vast majority do not act like they do. They are generally only interested in whether that incremental impact will be permitted by the regulatory agencies. They generally are not focusing on the cumulative, long-term impact of the announcements that they make over the course of a year, two years or even five years.

On the other hand, the goals of most environmental resource agencies are more long-term in scope. The charge to protect the environment is by its nature a long-term goal. It must be accomplished in short-term decisions but the emphasis is on the long-term. The first challenge to the CHP is to realize the conflict in the emphasis by the environmental resources community on long-term goals and the economic development community's emphasis on the short-term.

The next step is to help educate the economic development community on how the preservation of environmental resources in the long-term affects their short-term goals. Or put another way, the CHP needs to educate the economic development professional on what could happen to the attractiveness of the area if the wrong short-term decisions are made without regard

to their long-term impact on the environmental resources.

Many of the factors that are now attracting investment in the area could vanish. The overall quality of life, the availability of clean water and air, and in general the overall attractiveness of the area could be harmed if the environmental resources that make the area so attractive, are severely degraded. In addition, one of the major engines of the local economy, the tourist industry, could also suffer if the quality of these natural resources is permitted to decline to some unacceptable level.

Remove Some of the source of Conflict

One of the sensitive areas to the economic development community is the availability of new industrial sites. The pressure from the regulatory agencies as well as the pressure from residential neighborhood activists has resulted in a scarcity of high-quality, available sites. One component of a marketing strategy for the CHP is to work with the economic development community to identify and pre-qualify a variety of industrial sites in the region. This would help the economic developers in their search for new sites and assist them in marketing these sites to industry. Having sites pre-qualified or pre-permitted is an attractive selling point to industry. It could help in avoiding potential conflicts with other stakeholders in the area. In addition, it could possibly lower costs for infrastructure and insure that more sensitive areas are protected from inappropriate development.

Getting the Right Players to the Negotiating Table

As stated above, it is important to know who the stakeholders are in the process. But merely identifying them is not enough. The CHP must also get them to the negotiating table. This will only be accomplished if the CHP has successfully implemented its marketing strategy. It must have standing in the region. That is, both the development community and the environmental preservation community must recognize the CHP as having a role in the dialogue. It must have a reputation as a reasonable moderator between these two groups. The CHP must effectively

educate the development community on the importance of the long-term value of preserving the area=s environmental resources. At the same time the CHP must be able to convince the Atree huggers@ that growth will come Yregardless of whether they want it or not. The value of the CHP will be their ability to get the environmental community to work with the developers to facilitate the Aright@ kind of growth and to minimize its long-term impacts on the environment.

Concluding Ideas and Recommendations

The environment is an economic good and has measurable economic value. In Part 1 we discussed the various analytical techniques that may be used to value environmental resources. A number of methods were discussed. To be effective, CHP needs to balance the amount of analysis conducted. It is too easy to get bogged down by competing methods and experts and thus fail to make decisive recommendations where they are desperately needed. This is trap is referred to as a paralysis of analysis. We suggested that an "inventory" of economic benefits of environmental protection and enhancement be made. The availability of this inventory would allow CHP staff to refer to a dollar figure for preservation.

In Part 2 we discussed a number of strategies CHP may wish to consider. First and foremost, recognizing that the environment has value, we are not suggesting that CHP abandon nor diminish its efforts to preserve the environment. Rather, the thrust of our recommendations is that CHP focus on "selling the product" and on adopting policies that make environmental protection work within a context of economic development. For example, designing methods to stream line the permitting process does not abandon environmental protection. Rather it reduces the regulatory costs and uncertainties often surrounding development and protection. We are suggesting that CHP adopt the language of economic development and the tools of economic and business analysis in order to promote environmental protection. Thus, we suggest that CHP identify the stakeholders and then sell them on the idea of protection. CHP needs to take the long term view while recognizing that elected officials and economic developers will often have much shorter horizons. CHP can provide clear analysis that can cut through these difficulties. For example, conservation does not necessarily reduce a communities tax base by reducing the amount of land available for development. On the contrary, by reducing the available land property values could grow faster and thus the dollar value of the tax base would be larger. It is this kind of thinking and analysis that environmental agencies need to bring to the table.

Economic development and environmental development are compatible. Working with developers while protecting the environment is not inconsistent. CHP can serve the role of mediating between the two apparently inconsistent goals; especially by providing solid information and analysis. The negative consequences of development aren't often well known, nor are the positive benefits to development of conservation.

Business promotes itself through successful marketing. Environmental protection needs to be marketed. Business focuses on the bottom line, dollars of income or profits. Economic development officials focus on a bottom line, number of jobs. Environmentalists can't point to one, simple measure of success. We conclude with the suggestion that a line of research that would pay dividends in marketing environmental protection would be to construct a measure of your success: one that makes sense, is easy to understand, and conveys the value of your efforts.